INSTITUTE OF PUBLIC HEALTH

COLLEGE OF MEDICINE AND HEALTH SCIENCES

UNIVERSITY OF GONDAR

Work related stress and associated factors among Huajian shoe manufacturing employees in Dukem town, Oromia Region, Central Ethiopia

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APPROVED BY EXAMINING BOARD

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EXAMINER/S

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Acronym

AOR	**Adjusted Odds Ratio**
BSc	**Bachelor of Science**
CI	**Confidence Interval**
COR	**Crude Odds Ratio**
CMHS	**College of Medicine and Health Sciences**
EOHS	**Environmental and Occupational Health and Safety**
GHQ	**General Health Questionnaire**
Hrs	**Hours**
ILO	**International Labor Organization**
IPH	**Institute of Public Health**
IRB	**Institutional Ethical Review Board**
JCQ	**Job Content Questionnaire**
LFS	**Labour Force Survey**
MPH	**Master of Public Health**
NIOSH	**National Institute for Occupational Safety and Health**
NHS	**National Health Service**
OHS	**Occupational Health and Safety**
OLSA	**Oromia Labor and Social Affairs**
PPS	**Probability Proportional to the Size**
SPSS	**Statistical Package for Social Sciences**
UoG	**University of Gondar**
WPSS	**Workplace Stress Scale**
WRS	**Work Related Stress**

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Abstract

Background: Work related stress is the second most reported work-related health problem and the number of people suffering from stress-related conditions caused or made worse by work are likely to increase. Thus, the present study is intended to contribute to fill the information gap, and also will provide corner stone to design stress prevention and management programs for Huajian shoe manufacturing workers.

Objective: The objective of this study is to determine the prevalence of work related stress and associated factors among Huajian shoe manufacturing employees in Dukem town, Oromia region, central Ethiopia, 2016

Methods: Institutional based cross sectional quantitative study was undertaken from February 14 to April 4, 2016 in Huajian shoe manufacturing company. The sample size of the study was 422 shoe manufacturing employees. The collected data were checked, coded and entered to Epi Info version 7 and exported to SPSS version 20 for analysis. The odd ratios were calculated with 95% CI and $p< 0.05$ to identify significant variables. Bivariate and multivariate logistic regression analysis were employed.

Result: The response rate was 96% and the overall prevalence of work-related stress was 40.4% (95% CI: 35.7 to 45.3). Monthly income being paid 1100 Birr or less monthly (AOR: 5.87, 95% CI: 2.39, 14.42) and monthly income between1101 and 1300.00 Birr (AOR: 3.02, 95% CI: 1.19, 7.67), poor organizational support (AOR: 2.40, 95% CI: 1.39, 4.77), poor salary offers (AOR: 7.04, 95% CI: 3.39, 14.59), 1.6 to 2.01 years of work experience (AOR: 3.77, 95%CI: 1.68, 8.45), greater than 48 normal working hours a week (AOR: 3.40, 95% CI: 2.00, 5.79), greater than 20 overtime work per month (AOR: 2.24, 95% CI: 1.10, 4.61) and poor physical conditions (AOR: 2.44, 95% CI: 1.42, 4.19) were significantly associated with work related stress (WRS).

Conclusion and recommendation: The finding of this study showed that the prevalence of WRS in Dukem Huajian shoe manufacturing employees found to be high. Therefore, interventions of the systemic approach through establishing functional collective agreement between employer and employees trade union needed to improve WRS.

Keywords: Prevalence, Work related Stress, associated factors, shoe manufacturing employees, Ethiopia

1. Introduction

1.1. Statement of the problem

Stress is a difficult topic to address, since various people and different authorities have different definitions. Therefore, there is no single acceptable definition by authorities in the field of mental health or other fields. Stress is defined as an unpleasant state of emotional and physiological arousal that people experience in situations that they perceive as dangerous or threatening to their well-being (1).

Work-related stress occurs when there is a mismatch between the demands of the job and the resources and capabilities of the individual worker to meet those demands (2). Stress is the second most reported work-related health problem and the number of people suffering from stress-related conditions caused or made worse by work are likely to increase (3).

Globally, the magnitude of work related stress accounted for 35% of all work related ill health cases (4), in Tanzania among Academia emerged that about a third (30.1%) of the respondents seemed to experience high levels of stress (5) and in Ethiopia among nurses working in public hospitals showed that the prevalence of work related stress was 37.8% (6).

According to the International Labour Organization, almost 10% of workplace accidents are related to stress. Hence, the ability to effectively manage stress can help maintain organizational harmony (7). Work- related stress has been associated with a range of illnesses-health outcomes, such as cardiovascular diseases, musculoskeletal disorders, particularly back problems and neck-shoulder-arm-wrist-hand problems as well as absence from work (8). A research conducted in Debre Markos, Ethiopia among textile factory workers indicated that job stress, increased the risk of occupational injury (9). Moreover, stress related absenteeism and turnover are costly. The study estimated that almost 10% of the Gross National Product in European countries is lost because of stress related absenteeism and turnover (10).

The degree of stress experienced and the ways in which a person reacts to it can be

influenced by a number of factors such as personal characteristics, lifestyle, and social support, appraisal of the stressor, life events and socio-demographic and occupational variables (11).

Although the importance of individual differences cannot be ignored, scientific evidence suggests that certain working conditions, such as excessive workload demands, section of operation and conflicting expectations, are stressful to most people (12). Such evidence argues for a greater emphasis on physical conditions (for example, noise, lighting, smells, heat), shift work, long hours, travel, risk and danger, new technology, work overload and work under load as the key source of workplace stress, and for job redesign as a primary prevention strategy (13). Work-related stress (WRS) is an issue of growing concern in developing countries due to important developments in the modern world; two of the most significant being globalization and the changing nature of work (14).

Shoe manufacturing is one of the industrial sectors that have shown sustained growth and recruited workers yearly. However, insufficient attention has been given to workplace factors such as job insecurity, physical exertion, chemical exposure and organizational hazards (15).

These days, the expansion of industrialization and mechanization in developing countries, including Ethiopia has brought with its accompanying occupational health and safety issues. This new development has necessitated a fresh campaign for the protection of industrial workers from hazards which are unfavorable to their health, safety and welfare through the provision of occupational health services. Thus, work related stress data is a tool for the occupational health services to set priorities for prevention measures and evaluation of the existing methods. Identifying and addressing the factors related to work related stress helps to prevent loss of manpower and resources, and increases the productivity of industries.

Even though, the study was conducted in Ethiopia in case of work related stress among public Hospitals, particularly in manufacturing industry is not yet studied. Thus, the present study is intended to contribute to fill the information gap, enhance the body of knowledge about workers' work related stress and also will provide corner stone to design

stress prevention and management programs for Huajian shoe manufacturing workers in particular and for Ethiopian workers engaged in production areas in general.

1.2. Literature review

1.2.1. Magnitude of work related stress

There is evidence to suggest that work is one of a number of possible areas or aspects of life that can give rise to the experience of stress and ill-health (16). According to international labour organization 2013 report, the hidden epidemic a global prevalence of 2.02 million (86%) fatal due to work related diseases among them work related stress is the second (17) and the trends risen in developing and newly developed countries may be the reason why addressing and controlling emerging hazards such as work-related stress and its consequences for the health of workers is often seen as a lower priorities in these countries, in particular African countries (14).

The latest estimates from the Labour Force Survey (LFS) among European country showed that In 2014/15 stress accounted for 35% of all work related ill health cases (4). In Kaunas, the data presented by a cross- sectional study conducted in 2010 among female office workers showed that the prevalence rates of work-related demands were high, but despite that, influence at work; possibilities for development, and the sense of coherence were found to be extremely weak towards stress (18). According to a study conducted in the Bristol City in England stress and Health at Work in 2000, showed that the prevalence of WRS was 20% (19).

A study Conducted in Indian among resident doctors from all colleges of Delhi, indicated the prevalence of stress was found to be 32.8% (20). Over the period 2003–09, the proportion of NHS staff who said they had suffered from work-related stress in the preceding year reduced from 39 to 28%(21). A study conducted in Tanzania among Academia emerged that about a third (30.1%) of the respondents seemed to experience high levels of stress (5).

The research done in Iran among Iranian car manufacturing workers indicated that the prevalence of job stress was 21.3% (22). A cross sectional study conducted in Vietnam on shoe manufacturing workers showed that the prevalence of job stress was 20.7% (23).

According to research conducted in Ethiopia among nurses working public hospitals showed that the prevalence of work related stress was 37.8% (95% confidence interval: 34.3 to 39.1) nurses reported experiencing occupational stress (6).

1.2.2. Factors associated with work related stress

1.2.2.1. Socio demographic factors

Many studies found that the level of work-stress vary according to differences in socio demographic factors. A study conducted among Chilean workers showed that exposure to psychosocial risk factors at work were higher in women than men (24). According to a study conducted in Vietnam and Sweden, female workers represented higher work stress than male workers. Most of them were young under 40 years old, a majority had professions characterized as high levels of experienced work related stress due to the interfere of leisure time (25) (23).

Similarly the study in Addis Ababa, Ethiopia among Nurses working in public Hospitals reported that female Nurses were more likely to suffer from work-related stress than males. Widowed and divorced nurses were more likely to experience occupational stress than married nurses (6). In the Republic of Slovenia 2014, showed between various subgroups of the population of professional workers revealed that fixed-term workers are under significantly more stress than permanent ones (26). According to research conducted in Eastern Saudi Arabia, among nurses showed that monthly income was not statistically significant with work related stress (27).

1.2.2.2. Job content factors

A study conduct in Finland showed that Job factors and overall satisfaction turned out to be related independently to stress in both groups. The strongest relation was found between stress and organizational job characteristics (i.e. Skill variety, task identity, task significance, autonomy, and feedback). According to research conducted in Finland among the workers, physical exhaustion and defects in ergonomic were also related to the experience of stress (28). Tom Cox et al, 2000 research on WRS indicated that several aspects of job content, which are found hazardous and these include low value of work, low use of skills, repetitive work, uncertainty, lack of opportunity to learn, high

attention demand, conflicting demands, insufficient resources (16). The research done in Iran among Iranian car manufacturing workers, indicated that the main occupational stressors were time pressure (78.5%), mode of payment and evaluation (56.4%), and interaction with people and machines (41.3%) (22).

A study done in the West Sussex country, south England, among head teachers showed that work overload and work-life imbalance were the key stressors (21). The research work shows that, work related stress hazards arise due to meaningless task and lack of variety; It is also noted that most stressful type of work are those which have excessive demand and pressures that do not match with the workers knowledge and abilities (29). The studies on the effect of work stress among men and women working groups in USA and found that due to high psychological work demands like excessive workload and time pressures leads to work stress and cause depression and anxiety in young working adults (30). It is noticed that work related stress hazards like depressive disorders and abdominal fat among workers due high work demands (31). The study done in Ethiopia among nurses working public hospitals revealed that Significant associations were found between nurses' stress and work shift, illness, and worksite or unit (6).

1.2.2.3. Organizational related factors

Stress factors included high work demands, time pressure, and too many administrative tasks. Participants reported making decisions, especially making risky decisions, and the feeling of being undervalued as being the main causes of frustration at work. The main sources of stress stem from the organization of work (legislation, rules, and other institutions) (26). The LFS showed that the reasons cited as causes of work related stress are also consistent over time with workload, lack of managerial support and organizational change as the primary causative factors (4). According to Tenibiaje Dele Joseph in Nigeria and a study done in the United States showed that the overtime work causes significant and increases risk of work related stress (8) (32).

A study done in Sweden among Swedish women showed that the prevalence of the three most reported items in perceived stress owing to indistinct organization and conflicts, was 38% for increased workload, 23% for conflicts at work and 17% for reporting stress

because of supervisors not solving the conflicts. Most prevalent items in perceived stress owing to individual demands and commitment were stress owing to hard to set limits with a prevalence of 44%, high demands on oneself at work, 29% and high responsibility for one's work, 29% (25).

The study in Saudi Arabia showed that those who work more than 50 hours per week were more stressed by those who always worked night shifts, 84.0% were more stressed, and of those who always worked weekends were also more stressed compared to those who never or sometimes worked weekends or night shifts (33). Similarly the study, which was done in Germany and Austria reported that the main source of workplace distress was working in night shifts, and weekends or were not getting free time compensation for working long hours (34). In Saudi Arabia, revealed that 93.9% of those who felt under pressure all the time, 95.2% of those who had conflicts of demand all the time, and 73.1% of those who believed there was inadequate staff to do the job were more stressed ($p<.001$ for all three groups) (33).

Work related stress conceptual framework

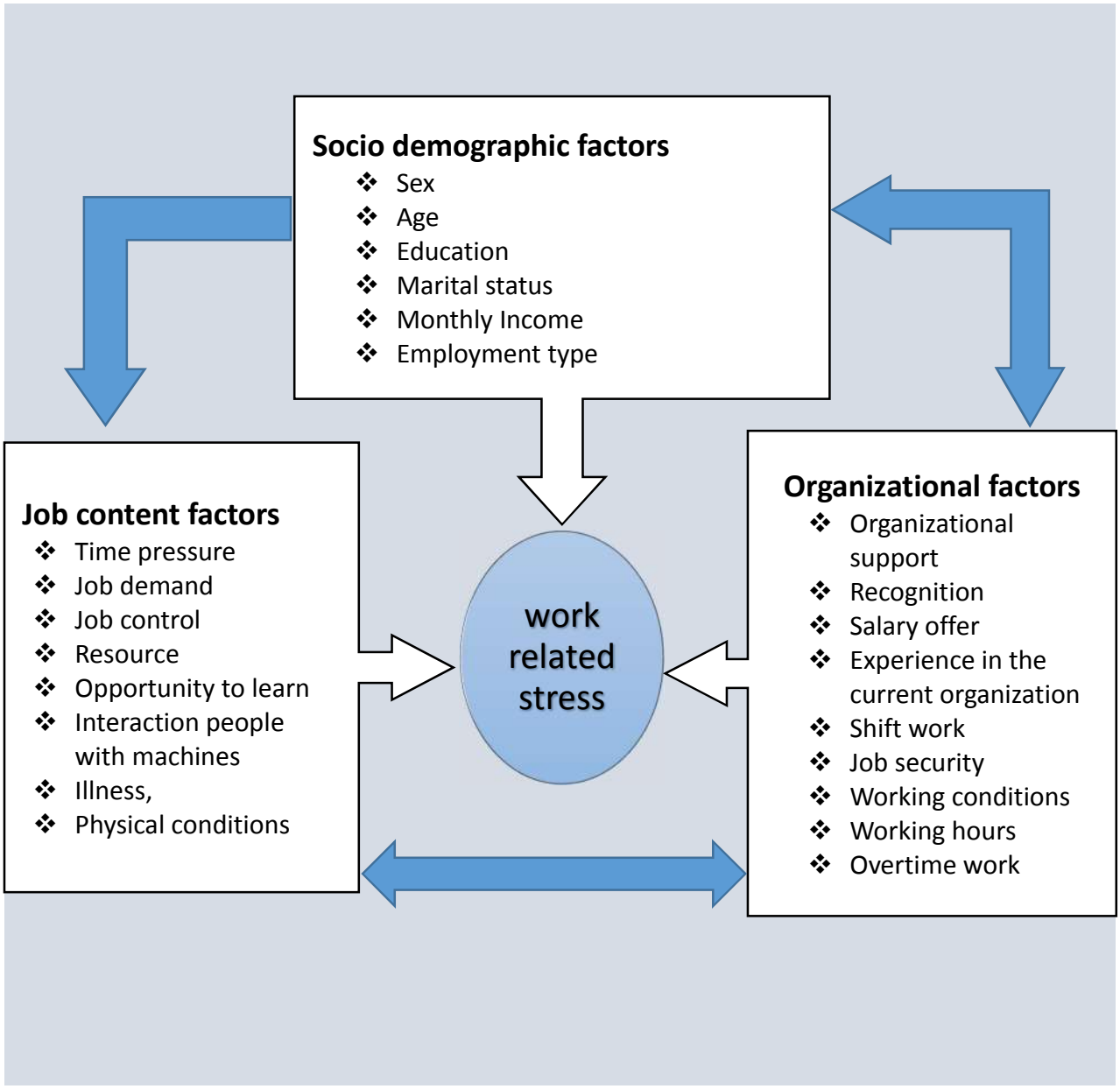


Figure 1 Conceptual framework on the prevalence of work related stress and associated factors

(Source: developed based on literature review and previous knowledge)

1.3. Justification

Many workers among Huajian shoe manufacturing company have reported experiencing high levels of work related stress in their work environment which lead to turn over and frequently recruit new workers are commonly practiced. However, making free from work related stress is a great value for increasing productivity and long stay employment. Though, work related stress rates have risen to high levels in the workplace in recent years and this has been continued to be of great concern to employers who view this as counter-productive and tackle industrial development. Additionally, many studies have indicated that Work-related stress was a pattern of reactions to work demands unmatched to workers' needs, resources, or capabilities; these challenges exceed their ability to cope, resulting in burnout, turnover, and low production quality and quantity. Moreover, work related stress is becoming the key problem for both employers as it costs much and, employees as they are at risk of disciplinary measures for lost work days due to illness that have legal backgrounds.

Identifying factors that contribute to this problem is necessary for better management of work related stress to minimize workplace disputes, reduce costs due to stress of occupational and non-occupational origin and increment of productivity, as prevalence of work demands unmatched to workers' needs, resources, or capabilities are uncontrolled in shoe manufacturing.

Therefore, this study examines the magnitude of work-related stress among shoe manufacturing employees and will identify the factors that contribute to work related stress, providing basic information for employers and policy makers to frame appropriate policy that will improve the greatest happiness for the greatest number the ultimate goal of the employees and the employers as well as the society.

2. Objectives

2.1. General objective

To determine the prevalence of work related stress and associated factors among Huajian shoe manufacturing employees in Dukem, Oromia region, Central Ethiopia, 2016

2.2. Specific objectives

- To determine the prevalence of work related stress among Huajian shoe manufacturing employees in Dukem, Oromia region, Central Ethiopia, 2016
- To identify factors associated with work related stress among Huajian shoe manufacturing employees in Dukem, Oromia region, Central Ethiopia, 2016

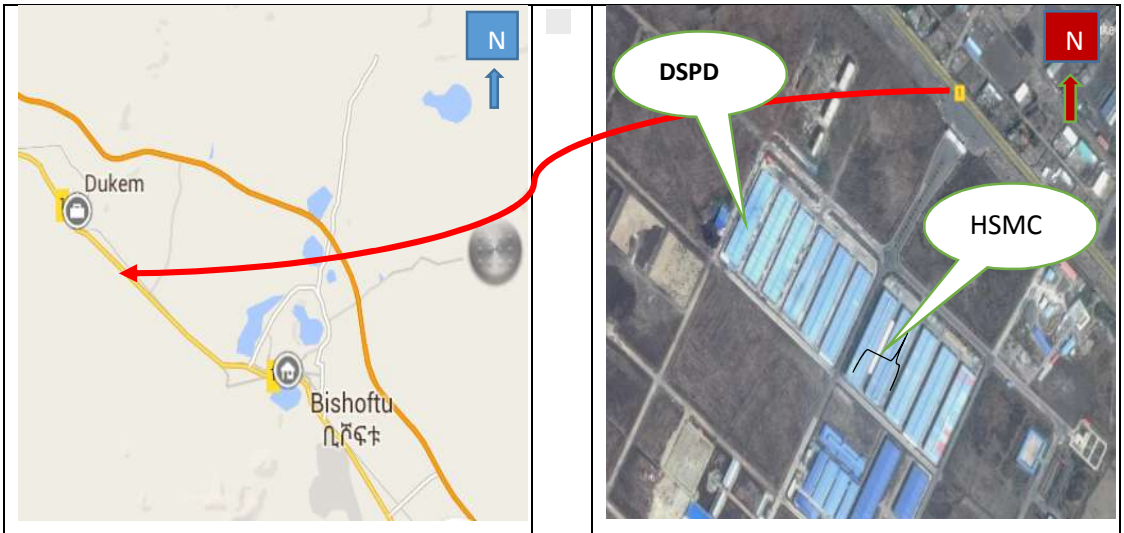
3. Methods

3.1. Study design

An Institutional based cross sectional quantitative study design was conducted in Huajian shoe manufacturing company.

3.2. Study Area and study period

The study was carried out in Huajian shoe manufacturing company, Dukem town from February 14 to March 4, 2016. Dukem is a town in central Ethiopia. It is named after the Dukem River, located in the Oromia Special Zone Surrounding Finfinne of the Oromia Region, 37km southeast of Addis Ababa and 10km northwest of Bishoftu, this town has a latitude 8.8000°N and longitude 38.9000°E and an elevation of 1950 m above sea level. The Huajian shoe manufacturing company was established in November 2011 and having commenced operation in January 2012. It is found in southeast Dukem town which consist of around 4500 Ethiopian workers and owned by foreign investors (Figure 2).



Source, Google earth: shows the location of the Eastern industrial zone in Dukem town

Figure 2 Location on the prevalence of work related stress and associated factors among Huajian shoe manufacturing workers in Dukem town, Oromia region, central Ethiopia, 2016.

3.3. Source and study population

3.3.1. Source population

All the workers who had been working in the Huajian shoe manufacturing company in Dukem town was considered as a source of population and the required sample size was drawn from these populations.

3.3.2. Study population

All workers who were actively working in the Huajian shoe manufacturing company had considered as study population and all the required information was collected from these populations.

3.3.3. Inclusion and Exclusion Criteria

- **Inclusion criteria**

All workers currently engaged in the Huajian shoe manufacturing company who had worked more than six months prior to the study was included in the study.

- **Exclusion Criteria**

All Chinese workers engaged in the Huajian shoe manufacturing company, workers, those who were absent and sick during data collection, administrative and supportive staffs were excluded from the study.

3.4. Sample size determination and sampling procedure

3.4.1. Sample size determination

In this study, sample size was determined using single population proportion formula. Taking the proportion of work related stress 50 % since there was no previous study done at work related stress among manufacturing industry within the country and across the country in similar settings and the maximum sample size at 95 % certainty and a maximum discrepancy of 5% between the sample and the underlying population. The formula to determine the sample size was shown below.

$$\mathbf{n} = \frac{\left(\mathbf{Z}_{\frac{\alpha}{2}}\right)^2 \mathbf{p(1-p)}}{w^2} = \frac{(1.96)^2 0.5(1-0.5)}{0.05^2}$$

n = 384.1 ≈ 384

Keys

- n = Sample size
- P = Assumption prevalence (50%)
- w = Margin of error(0.05)
- $\mathbf{Z}_{\frac{\alpha}{2}} = \mathbf{Z}_{\frac{0.05}{2}} = \mathbf{1.96}$

For possible non-response during the study the final sample size was increased by 10% to n= (384+38.4), the final sample size was **422**.

3.4.2. Sampling Technique and Procedure

The subjects were chosen by using PPS (probability proportional to the size in the study population), since the population of Huajian shoe manufacturing workers was homogeneous for their company. Then, using a simple random sampling technique by the Open epi random program was followed to select study participants from all lists of workers in the company.

3.5. Variables of the Study

3.5.1. Dependent variables

Work related stress

3.5.2. Independent variables

Socio-Demographic factors:

- Sex, Age, Education, Marital status, income and Employment.

Organizational factors:

- Social support, Recognition, Salary offer, Experience, Shift work, working conditions, Job security, Working hours and Overtime work.

Job content factors:

- Time pressure, job demand, job control, Resource, opportunity to learn, Interaction people with machines, Illness and physical conditions

3.6. Operational definitions

- **Manufacturing industry** is defined as the branch of manufacture and trade based on the fabrication, processing, or preparation of products from raw materials and commodities.
- **Work related stress**: “is not the only source of the workplace health problem, whereas the presence of work design, work organization and labour relations are aggravating the occurrence of stress at work." Generally, when the summation score of participant scores is below 60 (20-60).
- **Working conditions** are at the core of paid work and employment relationships. Generally, when the summation score of participant scores is more than 10 (10-15), and poor working conditions expressed as when the summed score of participants is less than 9 (3-9).
- **Physical conditions** are expressed in terms of unwanted sound, lighting, temperature, air circulation, smelling and dangerous substance. Generally, when the summation score of participant scores is below 9 (6-9) considered as poor physical conditions.
- **Organizational support: -** when the summed score of participant scores is more than 7 (7-10), unless considered as poor organizational support (3-6).
- **Organizational security:** - when the summed score of participant scores is more than 7 (7-10), unless considered as poor organizational security (3-6).
- **Recognition**: - when the summed score of participant scores is more than 7 (7-10), unless considered as lack of recognition (3-6).
- **Salary offers**: satisfied salary offers while the summed score of participant scores is more than 7 (7-10), unless considered as poor salary offers (3-6).
- **Time pressure: -** high time pressure while the summation score of participant scores is more than 10 (10-15), unless considered as a low time pressure (3-9).
- **Job demand:** - high attention job demand while the summation score of participant scores is more than 10 (10-15), unless considered as low job demand (3-9).

- **Illness** is expressed as personal ill health which affects work performance. Generally, when the summed score of participant scores is less than 3 (1-3) which affected the work, unless considered as the good health (3-6).
- **Job control**: - high job control when the summed score of participant scores is more than 7 (7-10), unless considered as low control over their job (3-6).
- **Resource** is a source or supply from which benefit is produced (i.e. Materials, energy, services, staff, and knowledge). Generally, when the summation score of participant scores is greater than 4 (4-5) considered as enough resource, whereas scarcity of resource (1-3).
- **Learning opportunity**: - Good learning opportunity when the summed score of participant scores is greater than 4 (4-5), whereas poor learning opportunity (1-3).
- **Interaction people with machines**: - When the summed score of participant scores is greater than 4 (4-5) considered as good interaction with machines, whereas poor interaction people with machines (1-3).
- **"Yes or No" response questions**: - 'Yes' was considered as high or highly stressed coded as [1] and 'No' was considered as low or non-stressed coded as [0]
- **Permanent workers**: - Any contract of employment deemed to have been concluded for an indefinite period.

3.7. Data Collection tools and procedure

Data were collected by using structured interviewer administered questionnaire having three parts; the first part, containing Socio-Demographic characteristics, the second part, organizational factors, the third part, job content factors and the last work related stress questions.

The questionnaire was collected by using interviewer administered Standardized questionnaire of occupational stress known as Workplace Stress Scale (WPSS) developed by Marlin Company, and the American Institute of Stress (35), job content Questionnaire (JCQ) developed by Robert Karasek and Benjamin Amick (36), and the National Institute for Occupational Safety and Health (NIOSH) (37) and health and safety execute. With some modification to contextualize in the setup. Additionally, structured questionnaire was prepared based on literature review, was employed to collect data on

employees' self-reported work related stress in the past six months. The questionnaire was prepared in English and translated to Afaan Oromoo.

The questionnaire contains organizational factors (working conditions, job security, salary offer, Experience, working hours, organizational support, employee recognition, overtime work and shift work), and job content factors (time pressure, job demand, job control, Resource, opportunity to learn, Interaction people with machines, illness and physical conditions) questions.

In this study the Standardized questionnaire of occupational stress was used to determine the prevalence of work related stress of the company.

The Standardized questionnaire of occupational stress uses of some 'Yes or No' response questions and five point Likert scale, score ranges from 1 (strongly disagree or Never) to 5 (strongly agree or very often) and reverse score ranges from 5 (strongly disagree or Never) to 1 (strongly agree or very often), according to perceived occurrence in their workplaces. Values 3 (neither or sometimes stressful) and below were assumed to indicate occupational stress coded as [1] and above 3 values considered as non-stressed coded as [0] (6).

The supervisor and eight data collectors were employed and trained for two days about ethical issues like voluntary participation, privacy and confidentiality of participants, the time of data collection, timely collection and reorganization of the collected data from Huajian shoe manufacturing company and submission date. The data collectors were health professionals and related fields in the study area.

3.8. Data Quality control /management

To ensure the data quality, high emphasis was given in designing data collection instruments and using standardized questionnaires. Before conducting the actual survey, the questionnaire was pre-tested on 34 individuals (8% of the sample size) from the Dongfang spinning printing and dyeing factory that has the same culture of work and the area, which was not included in the study; and modification of the questionnaire was made.

Throughout the course of data collection, the interviewer was supervised at the company, regular meeting was held between data collectors and principal investigator to solve problem faced during data collections. All the data from Huajian shoe manufacturing company were checked for completeness, clarity and consistency by the data collectors immediately after the data were collected. Data was entered on the daily bases and it was cleaned before analysis. Moreover, the interview was conducted in private for privacy of employees and to get the real facts on the subject area.

3.9. Data management and analysis

The collected data were checked, coded and entered to Epi Info version 7 and exported to SPSS version 20 for analysis. The Principal investigator was made data entry. Binary logistic regression was fitted to identify factors associated with work related stress. Tables, graphs, medians, proportions and frequencies were used to present the information. In bivariate logistic regression analysis, each explanatory variable with the outcome variable (work related stress) was evaluated for its association and those variables with p-value up to 0.2 were exported to the multivariable analysis for further examines and control confounding variables. The significance level was obtained at an odd ratio with 95% CI and p-value <0.05 to evaluate the association between factors and work related stress.

4. Ethical Consideration

The ethical approval and clearance were obtained from the Institutional Ethical Review Board (IRB), College of Medicine and Health Science; University of Gondar (UoG). The supporting letter was also acquired from Oromia Labor and Social Affairs (OLSA), respective town administrative office. The General Managers/managers of the organization under the study were communicated through an official letter and permission had secured before the research was conducted. Those Huajian shoe manufacturing employees in Dukem town, who were selected to participate, were informed about the purpose of the study, the importance of their participation, withdraw at any time. Written consent was obtained prior to data collection. Privacy and confidentiality of information given by each respondent were kept properly and personal identifiers were removed.

5. Result

A total of 406 study participants was involved in this study with a response rate of 96%.

5.1. Socio-demographic characteristics

Among the participants 228 (56.2%) were males and the median age of the respondents was 25 (IR ± 5) years which range from 18 to 38years. Two hundred eleven (52%) of the respondents were married/cohabiting, 214 (52.7%) of the employees had above secondary school (TVET, degree and above) and 162 (39.9%) of them reported as they are orthodox followers of religion. One hundred fourth-three (35.2%) of the respondent in earning less than or equal 1100.00 Birr per month (51.23 U.S. dollars) and 405 (99.8%) were permanent work agreement (Table 1).

Table 1 Socio demographic characteristics of WRS among Huajian shoe manufacturing employees in Dukem town, Oromia, central Ethiopia, 2016 (n=406)

Variable	Frequency	Percent
Sex		
Male	228	56.2
Female	178	43.8
Age		
18-21	61	15
22-26	208	51.2
27-30	104	25.6
31-34	31	7.6
>35	2	0.5
Marital status		
Single	186	45.8
Widowed, Divorced and Separated	9	2.2
Married/Cohabiting	211	52
Current educational status		
Primary school (1-8)	1	0.2
Secondary school (9-12)	191	47
Above secondary (TVET, degree...	214	52.7
Religion		
Orthodox	162	39.9
Muslim	71	17.5
Protestant	152	37.4
Others*	21	5.2
Monthly income **		
<=1100	143	35.2
1101- 1300	91	22.4
1301-1450	102	25.1
>1450	70	17.2
Type of employment		
Permanent	405	99.8
Temporary	1	0.2

TVET= Technical and **V**ocational **E**ducation and **T**raining *Wakefeta/Believer, catholic ** quartile classification

5.2. Organizational characteristics

Of the total participants 234 (57.6%) didn't get organizational support, 279 (68.7%) didn't get better working conditions from their workplace, 270 (66.5%) believed there was job insecurity. Two hundred eighteen (53.7 %) of the participants lacked recognition about their work performance and 211(52%) were poorly paid for their work.

The median working experiences of the respondents were 2.01 (IR ± 1.04) years ranged from 6 months to 4.07 years. Regarding their working hours 192 (47.3%) were working for greater than 48 hours per week, 311 (76.6%) were working overtime greater than 20 hours per month and 204 (50.2%) workers work on permanent day shift (Figure 3 and Table 2).

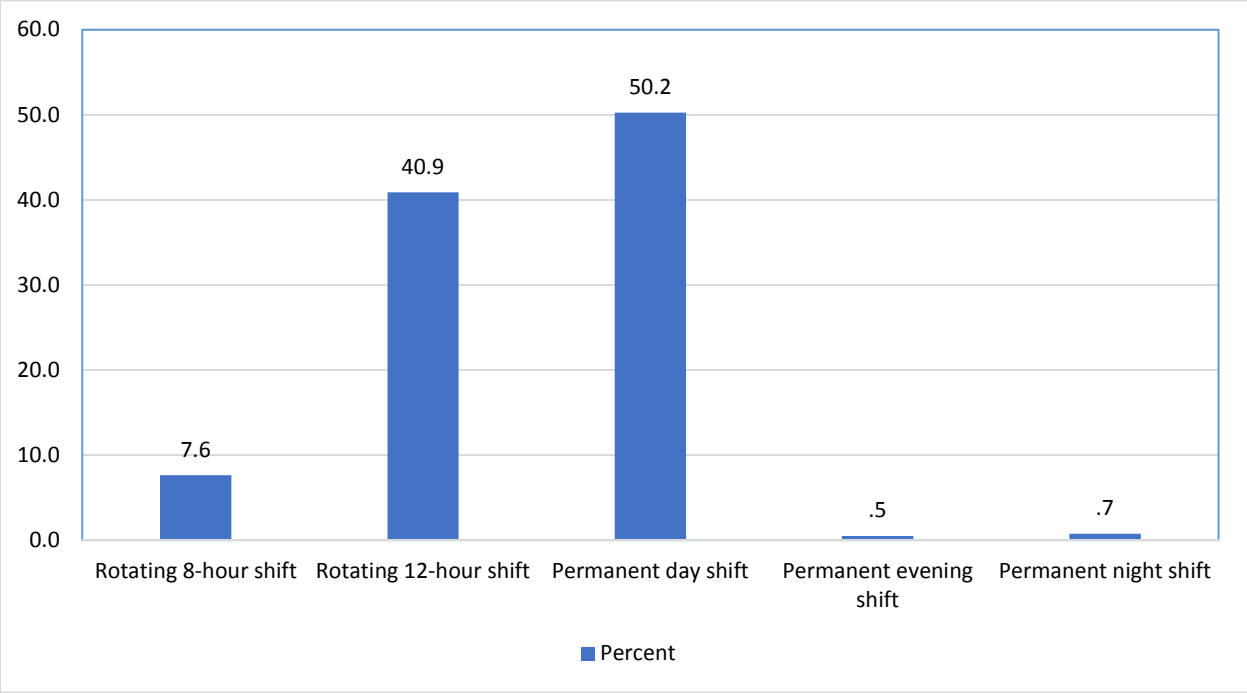


Figure 3 showing the percentages of shiftwork distribution of Huajian shoe manufacturing employees in Dukem, Oromia, central Ethiopia, 2016

Table 2 Organizational characteristics of WRS among Huajian shoe manufacturing employees in Dukem town, Oromia region, Central Ethiopia, 2016 (n=406)

Variable	Frequency	Percent (%)
Organizational support		
Good	172	42.4
Poor	234	57.6
Working conditions		
Good	127	31.3
Poor	279	68.7
Organizational job security		
Good	136	33.5
Poor	270	66.5
Employee recognition		
Good recognition	187	46.1
Lack of recognition	219	53.9
Salary offers		
Satisfied	195	48
Poor	211	52
Work experience in the current organization*		
0.06-1.05 year	113	27.8
1.06- 2.01 year	102	25.1
2.02-2.09 year	91	22.4
>2.09 year	100	24.6
Normal working hours per week**		
<=48 hours	214	52.7
>48 hours	192	47.3
Overtime working hours per month**		
<=20 hours	95	23.4
>20 hours	311	76.6

*quartile classification **based on Ethiopian labour proclamation 377/2003

5.3. Job content characteristics

Two hundred forty nine (61.3%) and 261 (64.3) of the respondents experienced high time pressure and high attention job demands related to their job respectively. 87.4% of the respondents were ill, 47 (11.6%) were practiced low job control, 224 (55.2%) were believed there was a scarcity of resource to do their job properly. Three hundred ninthly two (96.6%) of the respondents had poor learning opportunities from their work environment and 104 (25%) of respondents had poor interaction with their machines. Two hundred nine (51.5%) of the respondents were worked under poor physical conditions (Table: 3).

Table 3 Job related characteristics of WRS among Huajian shoe manufacturing employees in Dukem town, Oromia region, Central Ethiopia, 2016 (n=406)

Variable	Frequency	Percent (%)
Time pressure		
Low	157	38.7
High	249	61.3
Job demand		
Low attention	145	35.7
High attention	261	64.3
Illness		
No	51	12.5
Yes	355	87.4
Job control		
High control	359	88.4
Low control	47	11.6
Resource		
Enough	182	44.8
Scarcity	224	55.2
Learning opportunity		
Good	14	3.4
Poor	392	96.6
Interaction people with machine		
Good	302	74.4
Poor	104	25.4
Physical conditions		
Good	197	48.5
Poor	209	51.5

The overall prevalence of work-related stress was 40.4% [95% CI: 35.7 to 45.3].

5.4. Factors Associated With Work-Related Stress

The multivariate analysis demonstrated that monthly income, organizational support, salary offers, work experience, normal working hours, overtime work and physical conditions were significantly associated with work related stress.

Study participants who paid 1100 Birr or less monthly were about six times (AOR: 5.87, 95% CI: 2.39, 14.42) more likely to develop work related stress than those paid greater than 1450.00 Birr and those whose monthly income between1101 and 1300.00 Birr were three times (AOR: 3.02, 95% CI: 1.19, 7.67) more likely to develop work related stress than those getting greater than 1450.00 Birr.

Study participants who work under poor organizational support were two times (AOR: 2.40, 95% CI: 1.39, 4.77) more likely to develop work related stress than those working under good organizational support. Respondents who reported poor salary offers were seven times (AOR: 7.04, 95% CI: 3.39, 14.59) more likely to have work related stress than those satisfied salary offers. Respondents who have had 1.6 to 2.01 years of work experiences were about four times (AOR: 3.77, 95%CI: 1.68, 8.45) more likely to report work related stress compared with work experiences of greater than 2.09 years.

Respondents who have reported greater than 48 normal working hours per week were three times (AOR: 3.40, 95% CI: 2.00, 5.79) more likely to have work related stress than those working 48 hours or less per week. Those respondents who reported greater than 20 overtime working hours per month were two times (AOR: 2.24, 95% CI: 1.10, 4.61) more likely to have work related stress than those working 20 hours or less per month. Study participants who reported poor physical conditions were two times (AOR: 2.44, 95% CI: 1.42, 4.19) more likely to have developed work related stress than those in good physical conditions (Table 4).

Table 4 Binary Logistic Regression Analysis of Work-Related Stress and Associated Factors Among Huajian shoe manufacturing employees Working in Dukem town, Oromia region, central Ethiopia, 2016 (n = 406)

Variable	Work related stress		COR [95%Cl]	AOR [95%Cl]
	Yes	**No**		
Monthly income				
<=1100	**86**	**57**	**7.29[3.6, 14.8]**	**5.87[2.39, 14.42]***
1101- 1300	**39**	**52**	**3.63[1.7, 7.7]**	**3.02[1.19, 7.67]***
1301-1450	27	75	1.74[0.81, 3.73][a]	1.13[0.45, 2.89]
>1450	12	58	1	1
Organizational support				
Good	41	131	1	1
Poor	**123**	**111**	**3.54[2.3, 5.5]**	**2.40[1.39, 4.17]***
Salary offers				
Satisfied	36	159	1	1
Poor	**128**	**83**	**6.81[4.32, 10.74]**	**7.04[3.39, 14.59]***
Work experience in the current organization				
0.06-1.05 year	61	52	5.34[2.85, 10.04]	1.99[0.90, 4.39]
1.06- 2.01 year	**54**	**48**	**5.13[2.69, 9.73]**	**3.77[1.68, 8.45]***
2.02-2.09 year	31	60	2.35[1.21, 4.59]	1.65[0.72, 3.74]
>2.09 year	18	82	1	1
Normal working hours per week				
<=48 hours	55	227	1	1
>48 hours	**109**	**83**	**3.80[2.50, 5.77]**	**3.40[2.00, 5.79]***
Overtime working hours per month				
<=20 hours	17	74	1	1
>20 hours	**147**	**164**	**4.11[2.31, 7.27]**	**2.24[1.10, 4.61]***
Job demand				
Low attention	129	107	1	1
High attention	126	135	2.63[1.69, 4.09]	0.50[0.24, 1.06]
Physical conditions				
Good	52	145	1	1
Poor	**112**	**97**	**3.22[2.12, 4.89]**	**2.44[1.42, 4.19]***

[a]Significant at p *< .20. *significant at adjusted odds ratio; the Hosmer and lemeshow test is significant at 0.401, backward stepwise method was employed*

6. Discussion

The study has shown certain adverse health issues such as work related stress among employees in the workplace and factors which has associated with work related stress arising from the socio-demographic characteristics, organizational factors and job content factors respect to their statically significant.

In this study the overall prevalence of work related stress was 40.4%. This result showed that the company had high work related stress and areas with the most potential for improvement and needs urgent improvements. This result is comparable to the study reported 37.8% in Ethiopia among Addis Ababa public hospitals (6).This similarity might be due to similar country and sharing work culture within individuals.

However, its prevalence is higher as compared with the study reported, 35% in European countries (4) and in Bristol City (20%) (19). This difference might be due to economic development (14) and those countries were initiated organizational safety issue early compared to our country and access to health and safety training, level of enforcement regulation on health and safety service delivery. Again, the prevalence is higher as compared Asian countries; 32.8 in India (20), 21.3% in Iran (22) and Vietnam (20.7%) (23). This difference might be due to the differences in organizational behavior between countries. Those countries might have better management values, organizational commitments, leadership, and relationships within organizational member and lower unemployment rate. In this study, higher prevalence of work related stress is reported compared to Tanzania (30.1%) (5). This difference may be due to workplace and work culture in terms of normal working hours and overtime work.

Based on the multivariate analysis, monthly income, organizational support, work experience in the current organization, salary offers, working hours, overtime work and physical conditions were significantly associated with work related stress.

In this study, those participants who got 1100.00 Birr or less monthly and those who got between 1101.00 Birr and 1300.00 Birr were a statically significant association with work related stress compared to those who had greater than 1450.00 Birr. This might be due to imbalance payment and incentive offers with the job performance of individuals and inadequate organizational payment with respect to living area. However, in Eastern Saudi

Arabia monthly income was not statistically significant with work related stress (27). This variation might be due to the difference unemployment rate between countries.

Participants who work under poor organizational support were two times more likely to experience work related stress than those working under better organizational support. This study is similar to a study conducted in Sweden, which reported for conflicts because of supervisors not solving the conflict association with work related stress (25). The reason might be poor communication between employee and employers, supervisors and managers were not solving the conflicts which happened along colleagues. Another reason may be employers were lack of willingness to listen to work related problems and lack of supportive feedback on the work well done.

In this study, those participants who reported poor salary offers were seven times more likely to have experienced work related stress than those satisfied salary offers. The reason might be the availability of cheap labour in the country, low market competitions and may be poor reward or incentive system. This study is similar with a study conducted in Iran, which reported as mode of payment and evaluation were the main reason for work related stress (22).

Respondents who had between 1.06 and 2.01 years work experience in the current organization were about four times more likely to report work related stress as compared with respondent who had work experience in the current organization greater than 2.09 years. The reason may be tedious activities which has not related to employees professional work and imbalance work with profit. Those participants who had work experience between 0.06 and 1.05 years in the current organization were statistically insignificant association with work related stress. The reason may be the first stage of interaction people with machines and getting new incur. Those participants who had work experience between 2.02 and 2.09 years in the current organization were statistically insignificant associated with work related stress. The reason may be those employees who had developed work related stress would be terminated the work /turnover or would be promoted.

According to this study, those participants who reported greater than 48 normal working hours per week were three times more likely to have experienced work related stress than

those 48 or less normal working hours per week. This study is supported with study conducted in Saudi Arabia (33), Germany and Austria (34), which reported as work more than 50 hours per week were more work related stress. The reason may be interruption of weekly rest and participants may believe that working excessively long hours per week leads to exhaustion and illness. Another reason might be due to the obligation of work hours a week sited as labour proclamation has been broken /ceased.

In this study, those respondents who reported greater than 20 overtime work hours per month were two times more likely to have work related stress than those who had worked 20 hours or less per month. This study is supported by Tenibiaje Dele Joseph in Nigeria (8) and a study done in the United States (32), which reported as the overtime work is significantly increased risk of work related stress. The reason might be due to fatigue (employees simply being too physically and mentally tired to perform at their best ability), interference of leisure activities and participants may fair the consequence of overtime work on their personal health problem.

Based on this study, those participants who reported poor physical conditions were two times more likely to have experienced work related stress than those in good physical conditions. This finding is supported with study conducted in Ghana (13), and in Iran (15). The reason may be unwanted sound, extremely high or low temperature, poor air circulation, exposed to dangerous substance, smelling and lighting were uncomfortable with respect to employee job performance. The other reason may be poor workplace inspection regularly and the nature of the work.

6.1. Strength and limitation of the study

Strength

The data were collected from Huajian shoe manufacturing industry found in Dukem by standard questionnaires and contextualized in our set up to make representations. To understandable for all participants the questionnaire was translated into local language and interviewed.

Limitation

The possible limitation of this study was the inadequacy of literatures for the comparison of findings and non-respondent bias.

This is the first research in the country assessing the prevalence of work related stress among the private manufacturing industry.

7. Conclusion

The finding of this work showed that the prevalence of work related stress in Dukem Huajian shoe manufacturing employees found to be high.

Monthly income, organizational support, work experience in the current organization, salary offers, normal working hours, overtime work and physical conditions were factors significantly associated with work related stress.

8. Recommendations

The following recommendations were made based on the key findings of the study.

For the Labour and social affairs office

- Implement programs focused on improving work related stress with the collaboration of regional labour and social affairs bureau and MOLSA.
- Follow up and routine inspection should be undertaken on the normal working hours, overtime work and physical conditions based upon labour proclamation 377/2003.

For the private manufacturing industry

- Establish functional collective agreement between employer and the employees' trade union to strengthen organizational support and to advance salary offers.
- Updating employees' pay and reward evaluation system based on the hardship of environment and job performance.
- Respect the permitted working hours of normal working hours and overtime work according to Ethiopian labour proclamation 377/2003
- Implement occupational health and safety directive to make conducive physical conditions which lead employees to be stressed at work.

For the researchers

- Further operational research is needed on the private manufacturing industries concerning work related stress to strengthen the policy makers.

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10. Annexes

Annex I: Information Sheet and consent form

Title of Research project: Prevalence of work related stress and associated factors among Huajian shoe manufacturing workers in Dukem town, Oromia region, central Ethiopia.

Name of principal investigator: Morke Mezgebu (BSc)

Name of Organization: UoG, CMHS, IPH.

Introduction

This information sheet and consent form is prepared for the aim of explaining this research project that you are asked to participate. The objective of this research is to determine the Prevalence of work related stress and associated factors among Huajian shoe manufacturing employees in Dukem town, Oromia region central Ethiopia from January to June 2016.

The research group includes eight trained data collectors, one supervisor, two advisors from UoG and the principal investigator.

Procedure: The choice will be randomly using Open epi random program among Huajian shoe manufacturing organization's employees. You will be among the study participants if you are willing to take part and we kindly invite you to participate in the project.

Benefit, Risk and or Discomfort

By participating in this research project, you may feel discomfort in scarifying your work time (maximum 20 minutes). However, your participation will much contribute to for assessing prevalence and factors that contribute for work related stress. Moreover, it will help to solve problems arising from workplace due to stress, which is the leading cause of poor employer-employees relationship.

Incentives: You will not be provided any incentive or payment for participating.

Confidentiality: the information collected from you will be kept safe and stored in a file without your name by assigning a code and it will never accessible to your employers. Hence, no report of the study will identify individual identity.

Right to refusal or withdraw: You have the right to refuse no to participate or withdraw from the study at any time. But, your honest and willingness participation is very important to generate valid information that will be used for intervention designs.

Contact persons

This research project will review and approved by the Ethical clearance committee of University of Gondar. If you want to know more information, you can contact the through the address below. If you have any question or concern about this study, please contact the following individual.

1. Mr. Morke Mezgebu Cell phone 09-10-87-95-54

E-mail morke0473@gmail.com

2 Mr. Mulat G/Hiwot (Ass.Prof.) E-mail mulathiwot@gmail.com

3 Mr. Destaw Fetene (BSc., MPH) E-mail destaw.fetene@gmail.com

Annex II. English version Questionnaire

Code _____

UNIVERSITY OF GONDAR COLLEGE OF MEDICINE AND HEALTH SCIENCES
INSTITUTE OF PUBLIC HEALTH

Department of Environmental and Occupational health and safety (EOHS)

Structured questionnaire for the study

Prevalence of work related stress and associated factors among Huajian shoe manufacturing workers in Dukem, Oromia region, central Ethiopia 2016

Good morning/Good afternoon my name is _____ and I am on the behalf of Morke Mezgebu. He is candidate of Master's of public health Degree in Occupational health and safety management system Specialty at University of Gondar. He is conducting his Master's thesis on assess prevalence of work related stress and associated factors among Huajian shoe manufacturing workers in Dukem.

The main purpose of this study is to identify level and determinants of work related stress among Huajian shoe manufacturing workers and to provide information for health policy makers, managers, and individuals in particular shoe manufacturing workers about sources and outcomes of work related stress in shoe manufacturing workers.

I would appreciate your participation in this study. The information that you give will help the policy makers, managers, individuals and in particular shoe manufacturing workers to design prevention and management programs for work related stress. So, directly or indirectly you will be benefited from this study findings. The questioner usually takes about 20 minutes to complete. If you are not interested to participate in this study, you have full right and decision to not respond all the questions or partly. All of the answers you give will be confidential and will not be shared with anyone.

Are you willing to participate in this study? Yes_____ NO_____

I hope you will agree to participate in this study and provide the right response for the questions in the questionnaire.

If you have any question with regard to the study and the questions, please call to principal investigator (Morke Mezgebu) at the mobile (+251 910879554). E-mail address: morke0473@gmail.com

THANK YOU!

FOR YOUR PARTICIPATION AND COOPERATION!

Part I: Socio- Demographic Characteristic (please circle your appropriate response)

No.	Questions	Response	Remark
101.	Sex	1. Male 2. Female	
102.	Age	_____year	
103.	Marital Status	1. Single 2. Married /Cohabiting 3. Widowed 4. Divorced/separated	
104.	Current educational status	1. Illiterate 2. Primary school (1-8) 3. Secondary school (9-12) 4. Above secondary (TVET, degree...)	
105.	Religion	1. Orthodox 2. Muslim 3. Protestant 4. Others	
106.	Monthly income	_____ Birr.	
107.	Type of employment	1. Permanent 2. Temporary	

Part II : Organizational risk factors

For each statement, please circle the number to indicate your degree of agreement/ sensation

No.	Statements	Strongly disagreed	Disagree	Neither	agree	Strongly agree
	Organizational support					
201.	I feel close to the people at work	1	2	3	4	5
202.	I get along with my supervisors and manager	1	2	3	4	5
	Working conditions					

203.	I believe management is concerned about my health and safety	1	2	3	4	5
204.	I feel good about working at this company	1	2	3	4	5
205.	I believe work is good for my physical health	1	2	3	4	5
	Organizational job security					
206.	I feel secure about my job	1	2	3	4	5
207.	I feel good at my job	1	2	3	4	5
	Employees recognition					
208.	I receive recognition for a job well done	1	2	3	4	5
209.	All my talents and skills are used at work	1	2	3	4	5
	Organizational salary offers					
210.	My wages are good	1	2	3	4	5
211.	Concerning reward or incentive systems are good	1	2	3	4	5

	Questions	Response	Remark
212.	How long have you been working in your current organization?	____ years and ____ months	
213.	How many hours do you normally work per week in your job?	_____Hrs./week	
214.	Select the description that comes closest to your present WORK SHIFT	1. Rotating 8-hour shift 2. Rotating 12-hour shift 3. Permanent day shift 4. Permanent evening shift 5. Permanent night shift 6. Other	
215.	How many hours overtime do you work in your job in an average month? (Please mark “0” if no overtime)	_____Hrs./month	

Part III: Questions on the job related factors

Thinking about your job and describe how often you feel? Then circle the number to indicate you feeling

	Statements	Never	Rarely	Sometimes	Fairly Often	Very often
	Time pressure					
301.	How often does your job require you to work *very fast*?	5	4	3	2	1
302.	How often does your job require you to work *very hard*?	5	4	3	2	1
303.	How often does your job leave you with *little* time to get things done?	1	2	3	4	5
	High attention demand					
304.	How often is there a *great deal* to be done?	5	4	3	2	1
305.	How often is there a marked increase in the work load?	5	4	3	2	1
306.	How often is there a marked increase in the amount of concentration required on your job?	5	4	3	2	1
	Illness					
307.	You were in ill health which affected your work?	5	4	3	2	1
	Job control					
308.	I can exercise control in my position	1	2	3	4	5
309.	I can control the quality of what I produce	1	2	3	4	5
	Resource					
310.	I have enough resource in my team	1	2	3	4	5
	Learning opportunity					
311.	The work environment is encouraging and incites learning	1	2	3	4	5
	Interaction people with machine					
312.	I can interacted well with my machine	1	2	3	4	5
No.	**Physical conditions**	Response				Remark

313.	The level of **NOISE** in the area(s) in which I work is usually high.	1. Yes 2. No	
314.	The level of **LIGHTING** in the area(s) in which I work is usually poor.	1. Yes 2. No	
315.	The **TEMPERATURE** of my work area(s) is usually uncomfortable	1. Yes 2. No	
316.	The level of **AIR CIRCULATION** in my work area(s) is poor.	1. yes 2. No	
317.	The **AIR** in my work area(s) is smelling unpleasant.	1. Yes 2. No	
318.	In my job, I am exposed to **DANGEROUS SUBSTANCES**.	1. Yes 2. No	

Part IV: WORK-RELATED STRESS QUESTIONNAIRE

The following questions are important that your responses reflect your work in the last six months

No.	Statements	Never	Rarely	Some times	Fairly Often	Very often
401.	I am clear what is expected of me at work	1	2	3	4	5
402.	I can decide when to take a break	1	2	3	4	5
403.	Different groups at work demand things from me that are hard to combine	5	4	3	2	1
404.	I know how to go about getting my job done	1	2	3	4	5
405.	I am subject to personal harassment in the form of unkind words or behavior	5	4	3	2	1
406.	I have unachievable deadlines	5	4	3	2	1
407.	If work gets difficult, my colleagues will help me	1	2	3	4	5
408.	I am clear what my duties and responsibilities are	1	2	3	4	5
409.	I have to neglect some tasks because I have too much to do	5	4	3	2	1
410.	I can talk to my line manager about something that has upset or annoyed me about work	1	2	3	4	5
No.	Statements	Never	Rarely	Some times	Fairly Often	Very often
411.	I receive the respect at work I deserve from my colleagues	1	2	3	4	5
412.	I am given supportive feedback on the work I do	1	2	3	4	5

413.	My working time can be flexible	1	2	3	4	5
414.	My colleagues are willing to listen to my work-related problems	1	2	3	4	5
415.	I have some say over the way I work	5	4	3	2	1
416.	Pressure at work causes me to come to work when I am not well enough to work	5	4	3	2	1
417.	Pressure at work causes me to do my job less well	5	4	3	2	1
418.	I have taken time off due to pressure at work	5	4	3	2	1
419.	I have considered leaving this organization due to pressure at work	5	4	3	2	1
420.	Pressure at work has affected my health whilst working in this organization	5	4	3	2	1

Annexii III Gaffillee Afaan Oromoo

Koodii Gaaffilee_____

Yuniveersiitii Gondor kollejjii madiisinii fi saayinsii fayyaatti dhaabbilee fayyaa Hawaasaa

Kutaa Naannoo fi Ogummaa Nagummaa fi Fayyuummaa irraa

Caaseffama gaffilee qoraannoo

Hojjetoota warshaa kophee Huwaajiyaan Magaalaa Dukaam keessaatti Faca'insa Dhiphina walitti dhufenya hojiifi wantoota fiduu danda'an kan ilaalu, Naannoo Oromiyaa, Gidduu gala Itoophiyaa,2008

Akkam bultan?/Akkam Oltan?maqaan kiyyaa _____ jedhama. Ani obbo Morkee Mazgabuutiin kanan bakka bu'ee yoon ta'u, innis yeroo ammaa kana kadhimamaa digirii 2ffaa kutaa "Occupational health and safety management system" jedhamuun Yuniveersiti Gondor irraa fudhachaa jira. Qorrannoo digirii 2ffaa isaa Faca'insa **Dhiphina walitti dhufeenya hojii** fi wantoota fiduu danda'an jedhuun Hojjetootaa warshaa kophee Huwaajiyaan Duukamitti argamuu irraatti gaggeessaa jira.

Kaayyoo ijoon qorannoo kana sadarkaa fi wantoota D**hiphina walitti dhufeenya hojii** fiduu danda'an Hojjetootaa warshaa kophee Huwaajiyaan ilaalchisee kan adda basuu fi qopheesitoota poolisii fayyaa fi itti gaafatamtoota hojii fi namoota keessumayyuu warshaa kophee keessaa hojeetaaniif ka'umsa fi bu'aa **Dhiphiina walitti dhufeenya hojii** ilalchisee odeeffannoo kenuu dha.

Anis qorannoo kana irratti akka hirmattaan isiin jajjabeessa. Oddeffannoon isiin kenniittan qopheessitoota imaammata fayyaaf, itti gaafatamtoota hojii fi namoota keesumaayyuu warshaa kophee keessaa hojetaaniif ittisaa fi sagantaa hoggaansa faca'insa **Dhiphiina walitti dhufeenya hojii** irraatti akka hojjetaan ni gargaraa. Kanaaf kallatiniis ta'ee al-kallattiin argannoon qorannoo kanaa bu'aa isiiniif qaba. Gaaffilee kana guttaanii xumuuruuf yoo baay'ate daqiiqaa 20 isinitti fudhata. Yoo gaaffilee kana guutuudhaaf fedhii hin qabannee ta'ee dhiisuuf mirgaa guutuu ni qabdaan.Deebiin gaaffileef kennamuu martii iccittiin isaa kan egameef nama biroof kan hin darbinnee ta'uu ni hubachifna.

Qorannoo kana irraatti hirmachuuf feedhii ni qabda 1. Eeyyee_____ 2. Laakkii _____

Qorannoo kana irraatti akka hirmaattuu fi deebii qajeela gaaffilee dhiyyaataniif akka kenituu abdii naan qaba.

Yoo oddeffannoo dabalataa qorannoo kana yookiin gaaffilee kana ilaalchisee ogeessa qorataa (Morkee Mazgabuu) lakk. Bilbilaa mobayiilaa 0910879554 ykn tooraa Email morke0473@gmail.com irraatti argachuun ni danda'ama.

Deeggarsaa fi Hirmannaa gotaaniif Guddaa Galatoomaa!!!

Yuniveersiitii Gondor kolleejjii madiisinii fi saayinsii fayyaatti dhaabbilee fayyaa Hawaasaa

Kutaa I: Amalawwaan (Arfiiwwaan) soshoo dimoogiraphikii(deebii sirrii tahee itti maarii)

Lak.	Gaaffilee	Deebii	Yaada
101.	Saala	1 Dhira 2 Dhalaa	
102.	Umurii	_____Waggaa	
103.	Haala gaa'elaa	1. Kan fudhee/herumtee /kan waliin jiraatan 2. Kan abbaa/hadhaa manaa hin qabne 3. Kan wal hiikan/kan addaan bahaan	
104.	Sadarkaa Barumsaa	1. Kan duubisuu hin dandeenyee 2. Mana barumsaa sad 1ffaa (1-8) 3. Mana barumsaa sad 2ffaa(9-12) 4. Sadarkaa 2ffaa ol (TVET, digirii...)	
105.	Amantii	1. Ortodoksii 2. Musiliima 3. Protestaantii 4. Kan biro	
106.	Galii ji'aa	_____ Qarshii.	
107.	Gosa qaxarrii	1. dhaabbii 2. yeroo	

Kutaa II : Burqaa rakkoo dhabbataa ilaalchisee

Tokko tokkoon himaa armaan gadii laakkoofsa deebii kee argarsiisan itti maarii

lak.	Himoota	Baay'ee Gadi aanaa	Gadi aanaa	G/Gale essaa	Ol-aanaa	Baay'ee Ol-aanaa
Deggarsa dhabbataa						
201.	Bakka hojiitti namoota fana akka walitti dhufeenyaa qabutti hubadhaa.	1	2	3	4	5
202.	Suparvayizaraa koo yookkiin itti gaafatama koo irraa deeggarsaa nan argadha.	1	2	3	4	5
Haala hojii koo ilalchisee						

203.	Manajimantiin nagummaa fi ogummaa koo ilaalchisee quuqama akka qabanittan amana	1	2	3	4	5
204.	Jarmiyaa kana keessaa hojjechuun akka gaarii ta'eetti nan fudhaa.	1	2	3	4	5
205.	Hojiin fayyummaa qaamakoof gaarii akka ta'eetti naan amanaa	1	2	3	4	5
	Nageenya hojii dhabbataa					
206.	Hojiin kiyyaa nageenya akka qabutti nan amana	1	2	3	4	5
207.	Gahe hojii kiyyaa irraatti miiraa gaarii natti dhagahama.	1	2	3	4	5
	Fudhatama hojjetaa					
208.	Hojii gaarii hojjetameef fudhatama naan argadha	1	2	3	4	5
209.	Dandeetti koo fi ga'uumsakoo hundaan bakka hojiitti nan fayyadammaa	1	2	3	4	5
	Kaafaltii dhaabbataa ilalchisee					
210.	Mindaan koo gaarii dha.	1	2	3	4	5
211.	sirna badhasaa fi keennaa ilaalchisee gaarii dha.	1	2	3	4	5

	Gaaffilee	Deebii	yaada
212.	Dhabbata kana keessaa hangam hojjetee?	waggaa____ fi ji'a ____	
213.	Torbaan tokko keessatti sa'aatii idilee hangaam hojjetaa?	sa'aatii./torbee_____	
214.	**Faraqaa hojii** waajjiin wal qabatee himaa sirrii ta'ee filaadhu	1. Marsaa hojii sa'aatii -8 2. Marsaa hojii sa'aatii -12 3. Faraqaa guyyaa dhabbataa 4. Faraqaa Waaree booda dhabbataa 5. Faraqaa halkaanii dhabbataa 6. Kan biroo	
215.	Ji'a tokko keessatti sa'aatii dabalataa avirejjiin hangaam hojjettaa? (yoo sa'aatii dabalata hin qabanne 0 jedhii)	sa'aatii./Ji'a_____	

Kutaa III: gaaffilee Burqaa rakkoo naannoo hojii waajjiin wal qabatu

Waa'ee bakka hojii kee yaadii sana booda miiraa kee ibsii. Laakkoofsa miiraa kee ibsu itti maruun agarsiisii

	Himoota	Gonkumaa	muraasa	Darbee darbee	Yeroo baay'ee	Garmalee yeroo baay'ee
	Dhiibaa yeroo					
301.	Yeroo hangaam hojii kee baay'ee hatattamaan akka hojettu si barbaada?	5	4	3	2	1
302.	Yeroo hangam hojiin kee baay'ee jabina si barbadaa?	5	4	3	2	1
303.	Yeroo hangaam hojiin kee si boqochiisaa, hanga wantootni sa'aatii muraasa gidduutti rawwataniitti?	1	2	3	4	5
	Feedhii/barbaachisumma hojii					
304.	Yeroo hangaam hojii kee raawwachuuf baay'ee si dhamasaa?	5	4	3	2	1
305.	Yeroo hangaam ulfinaa hojii kee irraatti aritiin akka hojjattu ni ta'aa?	5	4	3	2	1
306.	Yeroo hangam hangi yaa'insa hojii keettii yeroo barbadamuu aritiin akka hojjattu ni ta'aa?	5	4	3	2	1
	Dhukkubbii					
307.	Sababii dhukkubsachuu keetiin kan ka'e hojiin kee ni midhamaa?	5	4	3	2	1
	Hojii To'achuu					
308.	Gahe hojii koo to'achuuf shaakala nan godha.	1	2	3	4	5
309.	qulquullina Oomishakoo nan to'adha.	1	2	3	4	5
	Qabeenya (meeshalee hojii)					
310.	Garee hojii koo keessaa meshaalee hojii gaha ta'e nan qaba.	1	2	3	4	5
	caarraa baruumsaa					
311.	Naannoon hojii koo caarraa barumsaa nama kenna	1	2	3	4	5
	Hariiroo namaaf maashina gidduu jiru					
312.	Maashina koo akka gaariitti baradheen jira.	1	2	3	4	5

lak.	Haala qaama naannoo hojii ilaalchisee	Deebii	Yaada
313.	Sadarkaan **sagalee hin barbaachifne** bakka hojii kootti ol ni ka'a	1 Eeyyee 2 Lakkii	
314.	Sadarkaan **ifaa** bakka ani hojedhuu gadi bu'aadha.	1 Eeyyee 2 Lakkii	
315.	**Tamperecharii** naannoon hojii koo miija'aa miti	1. Eeyyee 2. lakkii	
316.	Sadarkaan yaa'iinsa qilleensa bakka hojii koo ilaalchisee gad-bu'aa dha.	1. Eeyyee 2. lakkii	
317.	Qilleensi bakka hojii koo foolii hin barbaachifne qaba.	1. Eeyyee 2. lakkii	
318.	Bakka hojii kootti keemikaala hamaaf naan saaxilama.	1. Eeyyee 2. Lakkii	

Kutaa IV: Gaaffilee Dhiphiina hariiroo (Walitti dhufeenya) hojii wajjiin qabu ilaalchisee

Gaaffileen armaan gadii **ji'oota jahaan darbaan ilaalchisee** deebii keessaan kallaattin kan barbaduu dha.

Lak.	Himoota	Gonkumaa	muraasa	Darbee darbee	Yeroo baay'ee	Garmalee yeroo baay'ee
401.	bakka hojii koo ilaalchisee maaltu narraa akka eegamuu nan beekaa.	1	2	3	4	5
402.	Yeroo kam boqonnaa fudhachuu akkan qabuu nan murtessaadha	1	2	3	4	5
403.	feedhiin(demand) hojii kutaa garagaraan jiraachuu irraa kan ka'e walitti fiduun baay'ee cimata	5	4	3	2	1
404.	Hojiin raawwadhe tokko akkamitti akka deemu nan beeka.	1	2	3	4	5
405.	Amala hin taanen yokiin jecha hin barbaachiifnen namummaa koo irraatti dhibbaan ni gaha.	5	4	3	2	1
406.	Hojiin naaf kennamuu guyyaa jedhame keesaatti xumuruun hin danda'amu.	5	4	3	2	1
407.	Yoo hojiin koo humnaa ol ta'e gareen hojii koo na deeggaaruu.	1	2	3	4	5
408.	Gahee hojii koo fi dirqama koo akka sirritti nan beekaa.	1	2	3	4	5
409.	Hojiin kiyyaa bayyachuu irraa kan ka'e hojiiwwan muurasaa ta'an irraan darbaa.	5	4	3	2	1

410.	wantaa na raakkisee hojechuu na dhorkee itti gaafatama dhiyyoo koo naan mariisisa.	1	2	3	4	5
Lak.	Himoota	Gonkumaa	muraasa	Darbee darbee	Yeroo baay'ee	Garmalee yeroo baay'ee
411.	Gaaree hojii koo irraa bakka hojitti kabaja nan argadha	1	2	3	4	5
412.	Hojii dalaguu irraa duub-deebii nama ijaaru nan argadha.	1	2	3	4	5
413.	Sa'aatiin hojii koo ni jijjiirama.	1	2	3	4	5
414.	Gareen hojii koo rakkoo hojii koo ilaalchisee na mudate ni caqasaa.	1	2	3	4	5
415.	Hojiin haala ani hojii koo ittiin dalaguu baay'ee dha nama jechiisisa.	5	4	3	2	1
416.	otoon ani ga'umsa hojii akka sirritti hin qabatiin baay'iina hojii irraa kan ka'e akkan hojedhuu nan dirqama.	5	4	3	2	1
417.	Baay'inni hojii qulqullina dalagaa koo gadi busa.	5	4	3	2	1
418.	Baay'ina hojii irraa kan ka'e yeroon boqonnaa naaf kennama.	5	4	3	2	1
419.	Bay'achuu hojii irraa kan ka'e dhaabbataa kana lakkisuu nan yaada	5	4	3	2	1
420.	Baay'inni hojii fayyaa koo akkasumas hojii dhabbata kanaa ni miidha.	5	4	3	2	1

Annex IV: Declaration

I, the under signed, MPH student declare that this is my original work for partial fulfillment of requirement for the degree of Master of Public Health in Occupational Health and Safety Management.

Name Morke Mezgebu

Signature_____

Place of submission: Institute of Public Health, College of Medicine and Health Sciences, University of Gondar.

Date of submission_____

This thesis work has been submitted for examination with our approval as University Advisor(s)

Approval of the advisors:

Advisors' Name	Signature	Date
1. Mr. Mulat G/Hiwot (Assistant .Prof.)	_____	_____/____/2016
2. Mr. Destaw Fetene (BSc,MPH)	_____	_____/____/2016